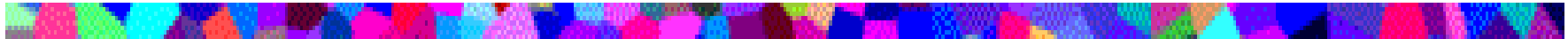


Section 1

Agricultural Education

2004-2005



Need course information?

- **Course Descriptions**
- **Course Sequences**
- **Certifications, Licenses, and Assessments**
- **Career Families**

Section 1: Agricultural Education

Course Descriptions, Sequences, Certification, Career Families

Section Overview

This section presents course information applicable to the Agricultural Education program area: course descriptions, course concentration and specialization sequences, certifications available to course completers, and career families. Following the course description, the remainder of the information for each course or course sequence is presented in a chart. The following definitions and criteria are summarized to clarify and enhance the chart components.

Sequences

A *concentration* is a coherent sequence of courses completed by a student in a specific career area as identified in this planning guide.

A *specialization* is a choice by a student to specialize in an occupational field by taking additional courses in a specific career area as identified in this planning guide.

A career and technical education *completer* is a student who has met the requirements for a career and technical concentration or specialization and all requirements for high school graduation or an approved alternative education program.

Certifications/Licenses/Assessments Available

Certain courses enable student completers to earn industry certification, a state license, and/or a national certification. These credentials are beneficial (and sometimes essential) to students seeking employment in a career field or occupational specialty. In addition, students who obtain these credentials earn verified credits toward graduation.

A *standard credit* is based on a minimum of 140 clock hours of instruction and successful completion of the requirements of the course.

A *verified credit* is based on a standard credit plus a passing score on the end-of-course SOL test (or other test as described in the Standards of Accreditation 8 VAC 20-131-110). A standard credit may not be verified more than once.

A *student-selected verified credit* is a credit for a course that includes a test (other than SOL) approved by the Virginia Board of Education.

For students to be eligible to receive student-selected verified credits, their teacher must be certified by the issuing organization relative to the industry certification or licensure. In the case of a CTE program area where there are potential multiple certifications, the teacher must be certified in at least one industry certification that is related to the course and/or course sequence. ***Exception:*** There is no teacher certification requirement for students to receive verified credits upon passing a selected NOCTI assessment related to their CTE program.

Verified credits (other than those earned through NOCTI) entitle students to the Career and Technical Education diploma seal. Some verified credits earn students the Advanced Mathematics and Technology seal. Each year, the Virginia Board of Education approves the industry certifications that enable students to earn these seals.

Additional information and the relationships among Board-approved examinations, verified credits, and diploma seals are explained in the Introduction and in Section 9. Additional information, including the description of each credential, how to earn it, and courses that may prepare students for examination, is contained in Section 10: Descriptions of Certifications, Licenses, and Assessments.

Career Families

To help students investigate careers and design their courses of study to advance their career goals, the Office of Career and Technical Education Services in Virginia has adopted the nationally accepted structure of career clusters, career pathways, and sample career specialties or occupations. Virginia educational agencies use the terms *career family*, *career area*, and *career role*.

To simplify federal reporting, *The Career and Technical Education Reporting System (CTERS) User's Manual* assigns a career family to each course. The family is also listed here.

Additional information and samples of CTE course selection using career families are included in Section 11: Instructional Planning with Career Families, Career Areas, and Career Roles.

Middle School Courses

Note: Middle school courses are reported in the Agricultural, Food, and Natural Resources career family. Completer sequences and certifications do not apply.

Introduction to Agriscience 8002

Grade Level: 6 (18 weeks or less)

Middle school students develop an awareness of the relationships between agriculture and science. Major concepts covered in the course include awareness of agriculture, the world of work, agribusiness careers, human relations, and scientific principles applied in agriculture.

Agriscience Exploration 8003

Grade Level: 7 (18 weeks)

Students explore science as it relates to agriculture and develop an understanding of human relations, communication, the importance of agriculture to the economy, and key scientific terms related to the field of agriculture.

Agriscience and Technology 8004

Grade Level: 8 (18 or 36 weeks)

Through laboratory activities, students apply scientific principles to the field of agriculture, including plants, animals, and ecology/conservation. The course introduces students to biotechnology as it relates to agriculture.

High School Course Credit in Middle School

Local school divisions may offer certain high school courses to students in middle school and award secondary credit to those students who master the secondary state-approved course competencies. Agricultural Education courses that may be offered in middle school are Agricultural Mechanics and Basic Plant Science 8006 and Agricultural Mechanics and Basic Animal Science 8008.

Fundamental Courses

Agricultural Mechanics and Basic Plant Science (Level I) 8006

Grade Level: 8 or 9 (suggested) (36 weeks, single period)

Approximately one-half of this course is devoted to agricultural mechanics, with emphasis placed on skill development in basic metals, tool fitting and cold metals, basic arc welding, sheet metal, soldering and brazing, plan reading and sketching, and hand woodworking. The remainder of the course emphasizes the development of competencies in plant sciences, rural and urban living, leadership, and resource conservation.

Note: This course may be offered on the middle school level for high school credit.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Plant Science 8006 and one or more of the following courses: <ul style="list-style-type: none"> • Agricultural Production Technology 8010 • Agricultural Production Management 8012 • Operating the Farm Business 8014 • Agricultural Power and Equipment 8016 • Agricultural Mechanization Sales and Service 8018 • Advanced Agricultural Mechanization 8020 • Agricultural Business Fundamentals 8022 • Agricultural Business Operations 8024 • Agricultural Business Management 8026 • Ecology/Environmental Management 8046 • Horticulture Sciences 8034 • Floral Design I 8055 • Floral Design II 8056 • Floriculture 8038 • Greenhouse Plant Production and Management 8035 • Landscaping 8036 • Specialty Horticultural Arts 8037 • Introduction to Natural Resources 8040 • Forestry, Wildlife, and Soil Management 8042 • Natural Resources Business Management 8044 • Turf Establishment and Maintenance 8051 • Advanced Turf Grass Applications 8054 	Agricultural Mechanics and Basic Plant Science 8006 and two or more of the courses listed for concentration	N/A	Agriculture, Food, and Natural Resources

Agricultural Mechanics and Basic Animal Science (Level II) 8008

Grade Level: 9 or 10 (suggested) (36 weeks, single period)

Students continue to learn agricultural mechanics, with emphasis placed on fundamentals of electricity, arc welding, gas cutting and welding, small engines, power woodworking, and wood and metal preservatives. They also receive instruction in animal science and further develop competencies in rural and urban living, leadership, and resource conservation.

Note: This course may be offered in middle school for high school credit.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Animal Science 8008 and one of the following courses: <ul style="list-style-type: none"> • Agricultural Production Technology 8010 • Agricultural Production Management 8012 • Operating the Farm Business 8014 • Agricultural Power and Equipment 8016 • Agricultural Mechanization Sales and Service 8018 • Advanced Agricultural Mechanization 8020 • Agricultural Business Fundamentals 8022 • Agricultural Business Operations 8024 • Agricultural Business Management 8026 • Introduction to Natural Resources 8040 • Forestry, Wildlife, and Soil Management 8042 • Natural Resources Business Management 8044 • Equine Management 8080 • Small Animal Care I 8083 • Small Animal Care II 8084 (requires Small Animal Care I prerequisite) • Veterinary Science 8088 	Agricultural Mechanics and Basic Animal Science 8008 and two or more of the courses listed for concentration	N/A	Agriculture, Food, and Natural Resources

Agricultural Business

Agricultural Business Fundamentals (III) 8022

Grade Level: 10 or 11 (suggested) (36 weeks)

Students develop the necessary knowledge, skills, habits, and attitudes for employment in off-farm agricultural businesses. Where training centers are available, cooperative arrangements with local agricultural businesses provide occupational experiences for students. When training centers are not available, simulated experiences may be provided. Leadership training is provided through the FFA.

Agricultural Business Operations (IV) 8024

Grade Level: 11 or 12 (suggested) (36 weeks)

Wherever possible, students participate in cooperative on-the-job training programs with local agricultural businesses. The curriculum emphasizes off-farm agricultural occupations, business procedures, merchandising, marketing, and agricultural business management. Instruction is provided in agricultural product knowledge, agricultural mechanics, plant science, and leadership development.

Agricultural Business Management (V) 8026

Grade Level: 12 (suggested) (36 weeks)

This occupational preparation course should be operated on a cooperative on-the-job training basis with local agricultural businesses. Much of the instruction may be individualized. The course provides further opportunities for the development of business procedures, management techniques, and agricultural product knowledge. Leadership skills continue to be developed.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and one of the following: <ul style="list-style-type: none"> Agricultural Business Fundamentals 8022 Agricultural Business Operations 8024 Agricultural Business Management 8026 	Agricultural Mechanics and Basic Animal Science 8008 and two or more of the courses listed for concentration	N/A	Agriculture, Food, and Natural Resources

Agricultural Machinery Service

Agricultural Power and Equipment (III) 8016

Grade Level: 10 or 11 (suggested) (36 weeks)

Students prepare for entry-level employment and advancement in the agricultural equipment industry or for the operation and maintenance of farm equipment.

Students learn to use selected hand tools, precision measuring tools, and testing equipment in the maintenance of small engines.

Related Certification: Outdoor Power Equipment Certification

Agricultural Mechanization Sales and Service (IV) 8018

Grade Level: 11 or 12 (suggested) (36 weeks)

Students enrolled in this course learn operating procedures in a parts department, focusing on newly developed agricultural machines, engine analysis and troubleshooting, basic hydraulics, mechanical power transfer systems, the implement industry, metal fusion and fabrication welding, and adjustment and repair of tillage equipment.

Advanced Agricultural Mechanization (V) 8020

Grade Level: 12 (suggested) (36 weeks)

Much of the instruction may be offered through individualized instruction and independent study. Major learning areas include operation of an agricultural machinery service department; adjustment, maintenance, and repair of planting, spraying, fertilizing, and crop harvesting equipment; diesel engine systems; organization and management of agricultural machinery dealerships; and agricultural sales techniques.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and one of the following: <ul style="list-style-type: none"> Agricultural Power and Equipment 8016 Agricultural Mechanization Sales and Service 8018 Advanced Agricultural Mechanization 8020 	Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and two or more of the courses listed for concentration Additional choices for specialization: <ul style="list-style-type: none"> Technology Foundations 8403 Technology Transfer 8405 	Available upon completion of Agricultural Power and Equipment: <ul style="list-style-type: none"> Outdoor Power Equipment Certifications (EETC) Agricultural Mechanics Assessment (NOCTI) Available upon completion of Agricultural Mechanization Sales and Service: <ul style="list-style-type: none"> Agricultural Mechanics Assessment (NOCTI) 	Agriculture, Food, and Natural Resources

Agricultural Production

Agricultural Production Technology (III) 8010

Grade Level: 10 or 11 (suggested) (36 weeks)

This course emphasizes one or more areas of plant science, animal science, soil science, agricultural business management, and agricultural mechanization, based upon the student's employment objective. Supervised occupational experience programs and leadership training are important parts of the course. When only single periods are provided, greater emphasis is placed on individualized instruction and supervised occupational experience programs.

Agricultural Production Management (IV) 8012

Grade Level: 11 or 12 (suggested) (36 weeks)

Course includes instruction in agricultural mechanics, with emphasis placed on the application of mechanical skills to farm power and machinery, soil and water management, supervised farming programs, and leadership training.

Operating the Farm Business (V) 8014

Grade Level: 12 (suggested) (36 weeks)

Much of the content in this occupational preparation course may be provided through individualized instruction. Students focus on farming, farm management, and occupational experience as they receive instruction in adjusting, operating, and maintaining farm machinery and equipment and in planning and constructing farm buildings and facilities. Continued emphasis is placed on leadership training.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and one of the following: <ul style="list-style-type: none"> • Agricultural Production Technology 8010 • Agricultural Production Management 8012 • Operating the Farm Business 8014 	Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and two or more of the courses listed for concentration Additional courses available for specialization: <ul style="list-style-type: none"> • Equine Management 8080 • Small Animal Care I 8083 • Horticulture Sciences 8034 • Greenhouse Plant Production and Management 8035 • Landscaping 8036 • Floriculture 8038 • Turf Establishment and Maintenance 8051 • Advanced Turf Grass Applications 8054 	Available upon completion of Agricultural Production Technology or Agricultural Production Management: <ul style="list-style-type: none"> • Production Agriculture Assessment (NOCTI) 	Agriculture, Food, and Natural Resources

Natural Resources Management

Introduction to Natural Resources (III) 8040

Grade Level: 10 or 11 (suggested) (36 weeks)

Students develop knowledge and skills required for employment in occupations related to forestry and wildlife management; outdoor recreation; and air, soil, and water conservation. Because of the emphasis on different facets of natural resources management in different parts of the state, the course varies to meet local needs and interests.

Forestry, Wildlife, and Soil Management (IV) 8042

Grade Level: 11 or 12 (suggested) (36 weeks)

This course includes instruction in forest protection and harvesting, fish pond ecology and management, planning and operation of a hunting and fishing preserve, wildlife ecology and management, soil and water management systems, service and operation of large power equipment, and leadership training.

Natural Resources Business Management (V) 8044

Grade Level: 12 (suggested) (36 weeks)

Much of the instruction in this course may be individualized. Major learning areas include processing forest products, lumber grading, and determining the feasibility of establishing, financing, and managing a business such as forestry, outdoor recreation, wildlife, or urban conservation. Based upon interests, students may receive instruction in developing and operating campgrounds, hiking and riding trails, riding stables, marinas, vacation farms, and farm ponds. Operation and maintenance of equipment is also emphasized. Leadership training is an important area of instruction.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and one of the following: <ul style="list-style-type: none">• Introduction to Natural Resources 8040• Forestry, Wildlife, and Soil Management 8042• Natural Resources Business Management 8044	Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and two or more of the courses listed for concentration	Available upon completion of Introduction to Natural Resources or Forestry, Wildlife, and Soil Management: <ul style="list-style-type: none">• Forestry Products and Processing Assessment (NOCTI)	Agriculture, Food, and Natural Resources

Horticulture

Horticulture Sciences 8034

Grade Level: 11 or 12 suggested

In this course, students develop the necessary knowledge, skills, habits, and attitudes for entry-level employment and advancement in areas such as floriculture, landscape design, greenhouse operation, nursery plant production, and turf management. They receive instruction in using soil and other plant-growing media and in identifying, propagating, and growing horticultural plants in the greenhouse and land laboratory. Instruction is provided in safety practices and leadership development.

Floral Design I 8055

Grade Level: 11 or 12 (suggested) (36 weeks)

Prerequisite: Horticultural Sciences 8034

This course offers an expanded study of floral design, which was begun in the Horticulture Sciences course. Course content covers career opportunities, floral design foundations, design applications, and the marketing of floral products. Specific design styles to be examined include mass, mass-line, line, vase, wedding, balloon, holiday, and personal-adornment arrangements. The course also emphasizes leadership activities and opportunities to participate in FFA events.

Floral Design II 8056

Grade Level: 11 or 12 (suggested) (36 weeks)

Prerequisite: Floral Design I 8055

Course content covers a wide range of specialty floral designs, including historical designs, contemporary designs, oriental designs, seasonal designs, floragraphy, and designs for dried arrangements, novelty pieces, special events, and sympathy work. The business aspect of the industry is addressed through the study of pricing, advertising, shop design, wire services, delivery processes, professional organizations, sales techniques, and continuing education. The course emphasizes leadership activities and opportunities to participate in FFA events.

Floriculture 8038

Grade Level: 11 or 12 suggested (36 weeks)

Prerequisite: Horticulture Sciences 8034

Students learn the basics of the horticulture plant production industry. Instruction includes the science of plant production as well as marketing and business management. Plant material identification and floral design round out this course to prepare the student for an entry-level position in the floriculture industry. Participation in FFA activities provides leadership development opportunities.

Greenhouse Plant Production and Management 8035

Grade Level: 11 or 12 suggested (36 weeks)

Prerequisite: Horticulture Sciences 8034

Students enrolled in this course learn the operating procedures for a greenhouse. Units of instruction include developing plant production facilities, science application in plant production, and identification of plants. Business management and marketing skills are emphasized to prepare students for careers in the greenhouse plant production and management industry. Leadership development is offered through participation in FFA.

Landscaping 8036

Grade Level: 11 or 12 suggested (36 weeks)

Prerequisite: Horticulture Sciences 8034

In this course, students develop the necessary knowledge, skills, habits, and attitudes for entry-level employment and advancement in areas such as landscape design, landscape construction, and landscape maintenance. They receive instruction in sketching and drawing, analyzing a landscape site, designing for function and aesthetics, identifying and selecting landscape plants, purchasing and installing plants, and maintaining the landscape by watering, fertilizing, mulching, pruning, and controlling pests.

Specialty Horticulture Arts 8037

Grade Level: 11 or 12 (suggested)

Prerequisite: Horticultural Sciences (8034)

This course covers a wide range of specialty topics, including topiary, fruit and vegetable production, interior plantscaping, terrariums, dish gardens, bonsai, container gardens, heirloom plants, container water gardens, bulb forcing, and hydroponics. Further study is devoted to gardens that are centered on such themes as healing, wildlife, fragrance, and handicapped accessibility. Entrepreneurial business and continuing education opportunities are also addressed. The course emphasizes leadership activities and opportunities for participate in FFA events.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Horticulture Sciences 8034 and one of the following: <ul style="list-style-type: none">• Greenhouse Plant Production and Management 8035• Landscaping 8036• Floriculture 8038• Floral Design I 8055• Specialty Horticulture Arts 8037	Horticulture Sciences 8034 and two of the following: <ul style="list-style-type: none">• Greenhouse Plant Production and Management 8035• Landscaping 8036• Floriculture 8038• Floral Design I 8055• Floral Design II 8056• Specialty Horticulture Arts 8037	Available upon completion of any horticulture course except Landscaping: <ul style="list-style-type: none">• Greenhouse Operators Certification Program (Southeast Greenhouse Growers Association) Available upon completion of Horticulture Sciences 8034 or Floriculture 8038: <ul style="list-style-type: none">• Horticulture—Floriculture Assessment (NOCTI) Available upon completion of Horticulture Sciences 8034 or Landscaping 8036: <ul style="list-style-type: none">• Horticulture—Landscaping Assessment (NOCTI) Available upon completion of Horticulture Sciences 8034 or Greenhouse Plant Production and Management 8035: <ul style="list-style-type: none">• Horticulture—Olericulture (NOCTI)	Agriculture and Natural Resources

Biotechnology Program

Biotechnology Foundations 8085

Grade Level: 10 or 11

This course focuses on various techniques that are used to modify living organisms, or parts of organisms, to improve plants and animals, and the development of microorganisms for specific purposes. Student activities range from bioprocessing and genetic engineering to biomedicine, biomedical systems, and the environment. Students gain insight and understanding of biotechnology career fields.

Biotechnology Applications in Agriculture 8087

Grade Level: 11 or 12 (36 weeks)

Prerequisite: Biotechnology Foundations 8085

This course enables students to understand the uses of biotechnology in the fields of plant and animal agriculture, the environment, and food science. Students develop occupational skills in agricultural biotechnology. Students have opportunities to apply the skills and concepts needed for careers in biotechnology. The course provides students with the knowledge to make balanced judgments regarding the benefits and concerns posed by agricultural biotechnology. The students are involved in many research and application activities.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Biotechnology Foundations 8085 and Biotechnology Applications in Agriculture 8087	Biotechnology Foundations 8085 and Biotechnology Applications in Agriculture 8087 and one additional course that addresses plant or animal science.	N/A	Agriculture, Food, and Natural Resources

Specialized Courses

Applied Agricultural Concepts 8072

Grade Level: 9-12 (18 weeks)

Applied Agricultural Concepts 8073

Grade Level: 9-12 (36 weeks)

Students who have limited or no agricultural background or experience learn fundamental agricultural competencies needed for rural or urban living. Areas of instruction include meat grading and selection; maintenance of home appliances and equipment; and the study of plumbing, electrical wiring, and carpentry fundamentals. Teachers may incorporate additional competencies in the study of soil fertility and in cultural practices for shrubs, lawns, gardens, and fruit trees. The course emphasizes leadership development activities and participation in FFA activities.

Note: Specialized courses may substitute in a program if approved by the local school division.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and • Applied Agricultural Concepts 8073	Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and • Applied Agricultural Concepts 8073 • One 36-week or two 18-week courses within the Agriculture, Food, and Natural Resources career family.	N/A	Agriculture, Food, and Natural Resources

Biological Applications in Agriculture 8086**Grade Level:** 9-12 (36 weeks)

This course is designed to integrate science and agriculture in the Agricultural Education classroom. Students explore the world of agriculture and the biological principles associated with it. Competencies emphasize and reinforce standards of learning for biology with agricultural applications. Localities may substitute certain course competencies to facilitate the use of laboratory facilities. Approval can be requested from the Virginia Department of Education for science credit.

Note: Specialized courses may substitute in a program if approved by the local school division.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and Biological Applications in Agriculture 8086	Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and <ul style="list-style-type: none"> Biological Applications in Agriculture One 36-week or two 18-week courses that relate to plant or animal science 	N/A	Agriculture, Food, and Natural Resources

Ecology and Environmental Management 8045**Grade Level:** 9-12 (18 weeks)**Ecology and Environmental Management 8046****Grade Level:** 9-12 (36 weeks)

Students develop conservation competencies and skills through the understanding of environmental concerns. Instructional content includes the care, management, and preservation of soil, air, water, and wildlife. Students identify and discuss prevalent environmental problems and learn methods and practices used to preserve natural resources and maintain a healthy ecology. Teachers incorporate specific environmental concerns and issues common to the local school community. The course emphasizes leadership activities and opportunities to participate in FFA functions.

Note: Specialized courses may substitute in a program if approved by the local school division.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and Ecology and Environmental Management 8046	Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and <ul style="list-style-type: none"> Introduction to Natural Resources 8040 Ecology and Environmental Management 8046 	N/A	Agriculture, Food, and Natural Resources

Equine Management and Production 8015**Grade Level:** 9-12 (18 weeks)**Equine Management and Production 8080****Grade Level:** 9-12 (36 weeks)

In this course, students learn how to care for and manage horses. Equine health, nutrition, management, reproduction, training, evaluation, and showmanship are the major instructional areas. In addition, course content includes instruction in the tools, equipment, and facilities for equine enterprises. Business management topics include the economics of boarding, training, and merchandising horses. Leadership development activities are included, and participation in FFA activities is encouraged.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Animal Science 8008 and Equine Management and Production 8080	Agricultural Mechanics and Basic Animal Science 8008 and <ul style="list-style-type: none"> Agricultural Production 8010 Equine Management and Production 8080 	N/A	Agriculture, Food, and Natural Resources

Small Animal Care I 8083**Grade Level:** 8-12 (18/36 weeks)**Small Animal Care II 8084****Grade Level:** 8-12 (18/36 weeks)

Students learn how to care and manage small animals, focusing on instructional areas in animal health, nutrition, management, reproduction, evaluation, training, and, when applicable, showmanship. Course content also includes instruction in the tools, equipment, and facilities for small animal care and provides activities to foster business management and leadership development. FFA activities are included.

Note: Specialized courses may substitute in a program if approved by the local school division.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Animal Science 8008 and Small Animal Care I 8083 (36 weeks)	Agricultural Mechanics and Basic Animal Science 8008 and <ul style="list-style-type: none"> Small Animal Care I 8083 (36 weeks) Small Animal Care II 8084 (36 weeks) 	N/A	Agriculture, Food, and Natural Resources
Agricultural Mechanics and Basic Animal Science 8008 and <ul style="list-style-type: none"> Small Animal Care 8083 I (18 weeks) Small Animal Care 8084 II (18 weeks) 			

Veterinary Science 8088

Grade Level: 11 or 12 (36 weeks)

This course provides students with the employability and technical skills needed to succeed in postsecondary education and a career in veterinary medicine or in a related occupation. Course content will include the integration of academics and career skills and instruction in the use of tools, equipment, and facilities for veterinary medicine. Business management, leadership and FFA activities are included in the course. Students enrolled in the course should have a strong background in math and science and a knowledge of small animal care.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Animal Science 8008 and Veterinary Science 8088	N/A	N/A	Agriculture, Food, and Natural Resources

Small Engine Repair 8021

Grade Level: 9-12 (18 weeks)

Small Engine Repair 8082

Grade Level: 9-12 (36 weeks)

This course offers an intensive study of the operation, maintenance, and repair of small gasoline and diesel engines. Instructional topics include principles of operation of gasoline and diesel engines, tune-up and maintenance procedures, and disassembly, overhaul, and reassembly. Instruction may also include the operation of two cycle and four-cycle engines commonly found on lawn mowers, garden tractors, snow blowers, rotary tillers, chainsaws, and other equipment. The course emphasizes leadership activities and opportunities to participate in FFA functions.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and Small Engine Repair 8082	Basic Small Engine Repair 8724 and Small Engine Repair 8082 and one of the following: <ul style="list-style-type: none">• Entrepreneurship Education CCN9094• Industrial Cooperative Training TDI8904• Internship (course code to be determined)	Available upon completion of Small Engine Repair 8082: <ul style="list-style-type: none">• Outdoor Power Equipment Certifications (pass any one Outdoor Power Equipment Test) (Equipment and Engine Training Council)• Air-Cooled Gas Engine Assessment (NOCTI)	Agriculture, Food, and Natural Resources
Basic Small Engine Repair 8724 and Small Engine Repair 8082			

Turf Establishment and Maintenance 8051

Grade Level: 10 or 11 (suggested) (36 weeks)

Students begin to master the duties and tasks of professionals who establish and maintain turf in public areas such as golf courses; parks; athletic fields; school, industrial, and institutional campuses; and residential lawns.

Note: Specialized courses may substitute in a program if approved by the local school division.

Advanced Turf Grass Applications 8054

Grade Level: 11 or 12

Prerequisite: Turf Establishment and Maintenance

Students continue to study the duties and tasks of professionals who establish and maintain turf in public areas such as golf courses; parks; athletic fields; school, industrial, and institutional campuses; and residential lawns.

Note: Specialized courses may substitute in a program if approved by the local school division.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Plant Science 8006 and Turf Establishment and Maintenance 8051	Agricultural Mechanics and Basic Plant Science 8006 and <ul style="list-style-type: none"> Turf Establishment and Maintenance 8051 Advanced Turf Grass Applications 8054 	N/A	Agriculture, Food, and Natural Resources

Farm Equipment Operator 8052

Grade Level: 12 (suggested) (36 weeks)

This helps high school seniors acquire job-entry skills as operators of farm equipment. Instruction includes units on the safe operation and preventative maintenance of equipment used in planting, cultivating, fertilizing, dusting, spraying, and harvesting crops. Cooperative education is recommended as a part of this course.

Note: Specialized courses may substitute in a program if approved by the local school division.

Concentration Sequences	Specialization Sequences	Certification/License/Assessment Available	Career Family
Agricultural Mechanics and Basic Plant Science 8006 or Agricultural Mechanics and Basic Animal Science 8008 and Farm Equipment Operator 8052	N/A	N/A	Agriculture, Food, and Natural Resources

Courses for Special Populations

Agricultural Education for the Disabled 8050

Agricultural Education for the Disadvantaged 8053

General Mechanics for the Disadvantaged 8070

Agricultural Education Dual Enrollment with Postsecondary 8095

For information, please contact the Agricultural Education Service, Virginia Department of Education